

## INTRODUCTION

To the owner or user: The service manual you are reading is intended to provide you, and the maintenance or service technician with the information needed to install, start up, clean, maintain, and service this ice maker-dispenser.

The NDE754 is a combination nugget ice maker and countertop dispenser. A water station is standard.

The NDE754 ice making section is equipped with the following features: electronic controls for bin level and low water; thermostatic expansion valve; front service for most components; and R-404a (HP62) refrigerant. The ice dispensing section is a seamless plastic storage bin, with a stainless steel ice agitator at the bottom to sweep the ice into the dispensing chute.

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Keep it for future reference.

Note this symbol when it appears.



It marks a possible hazard.

# NDE754

## FOR THE INSTALLER: Specifications

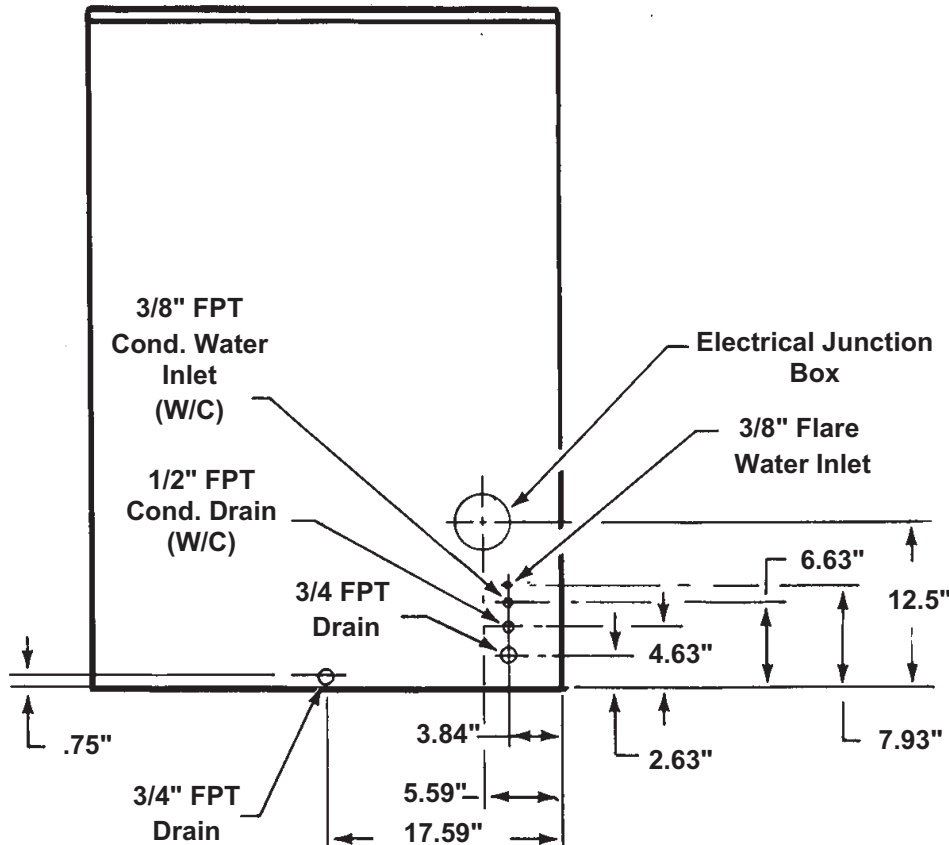
This ice maker-dispenser is designed to be mounted on a machine stand, or a countertop. Before beginning the installation, check that all the materials and kits required are available at the installation location.

Scotsman Ice Systems are designed and manufactured with the highest regard for safety and performance. They meet or exceed the standards of U.L., N.S.F., and C.U. L.

Scotsman assumes no liability or responsibility of any kind for products manufactured by Scotsman that have been altered in any way, including the use of any parts and/or other components not specifically approved by Scotsman.

Scotsman reserves the right to make design changes and/or improvements at any time. Specifications and designs are subject to change without notice.

**BACK VIEW**



### Water Limitations:

An ice machine is a food manufacturing plant; it takes in a raw material, water, and turns it into a food product, ice. The purity of the water is very important in obtaining pure ice and in maximizing product life.

General recommendations are:

1. Filter the water used to produce ice.
2. Check with a water treatment specialist for a water test, and any recommendations regarding filters and treatment.

Model Number	Dimensions (w/o stand) H" x W" x D"	Condenser Type	Refrigerant Charge (R-404A)	Basic Electrical	Minimum Circuit Ampacity*	Maximum Fuse Size
NDE754AS-1	45.74 x 35.18 x 29.26	Air	32	115/60/1	18.1	25
NDE754WS-1	same	Water	22	same	16.5	20

\*Minimum circuit ampacity is used to determine wire size and type per National Electric Code.

Options: Machine stand DMS31. Portion control kit KPC750.

## FOR THE INSTALLER

### Location

This ice system is designed to be installed indoors, in a controlled environment.

	Minimum	Maximum
Air Temp	50°F.	100°F.
Water Temp	40°F.	100°F.
Water Pressure	20 psi	80 psi
Voltage	104	126

Operating the machine outside of the above limitations, or outdoors, is potentially damaging to the machine; also it is misuse of the machine which may void the warranty.

### Service Limitations

Do not install in a location where the top of the machine is within 6" of a fixed ceiling. Air cooled models require a minimum of 6 inches to the left and right of the machine for air circulation. It is important that the machine be installed in a location where it has enough space above and behind it for service.

After uncrating and inspection, the unit is ready for installation.

### Machine Stand Installation

Tip the stand on its back and install the legs, return the stand to the upright position. Adjust leg levelers so that the stand does not "rock".

### Counter Top or Machine Stand Installation

The base of the icemaker-dispenser must be sealed to the object it rests upon. Food grade silastic sealant such as Scotsman part number 19-0529-01 is recommended.

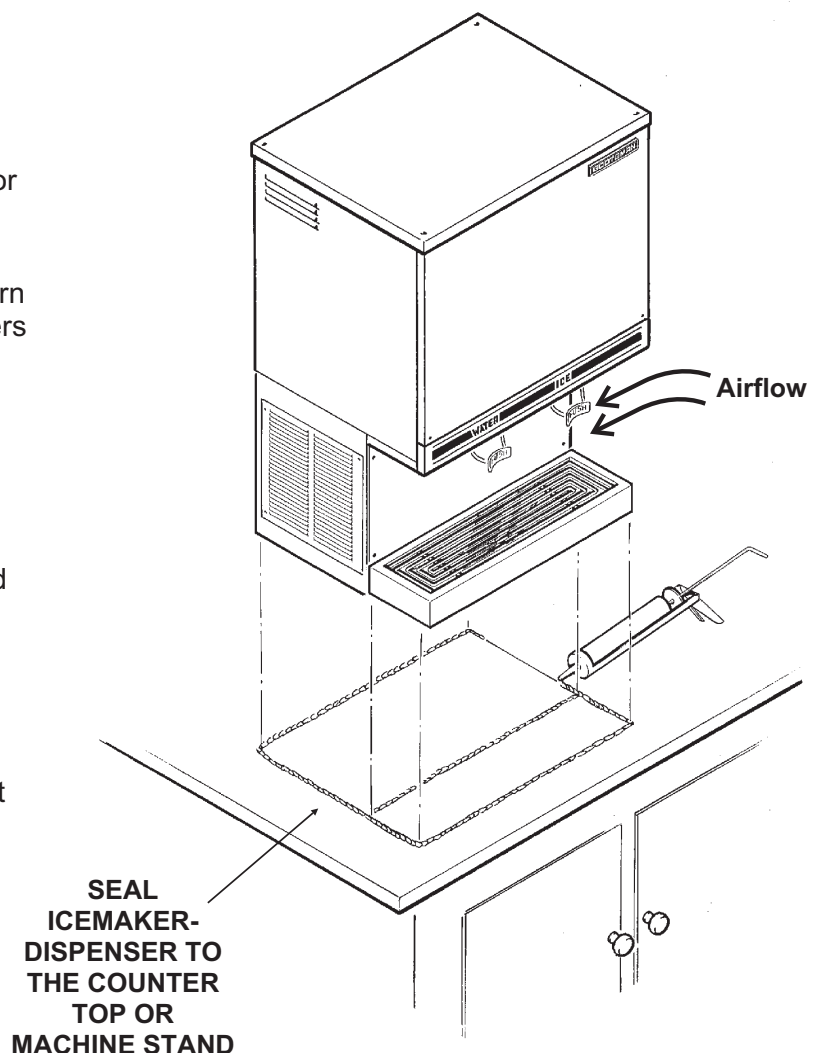
Place a bead of the sealant on the machine stand or counter top to match the outside edge of the cabinet base and sink.

The icemaker-dispenser is heavy: use of a mechanical hoist is recommended to lift it to the height required to install it.

The DMS machine stand has holes in the top that match up with threaded holes in the base of the machine. Secure the machine stand to the base with 4 5/16" bolts.

In both counter top and machine stand installations, wipe off and neatly smooth any excess sealant. Level the machine stand and cabinet.

Unpack and install the sink brackets. Fit the sink assembly onto the two sink brackets, and press onto the bead of sealant. Wipe off and neatly smooth any excess sealant from under the sink edge. Connect the sink drain to the dispenser drain system.



# NDE754

## FOR THE PLUMBER

### CONFORM TO ALL APPLICABLE CODES

#### Water Inlet

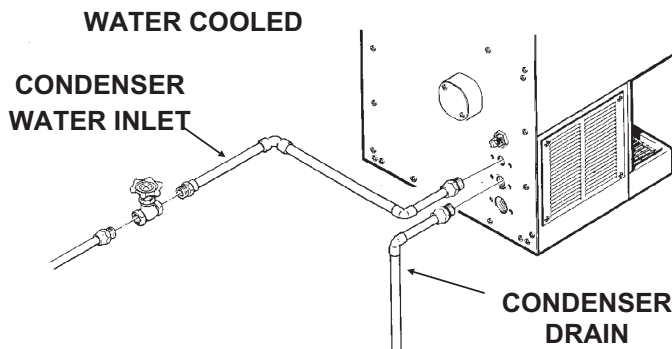
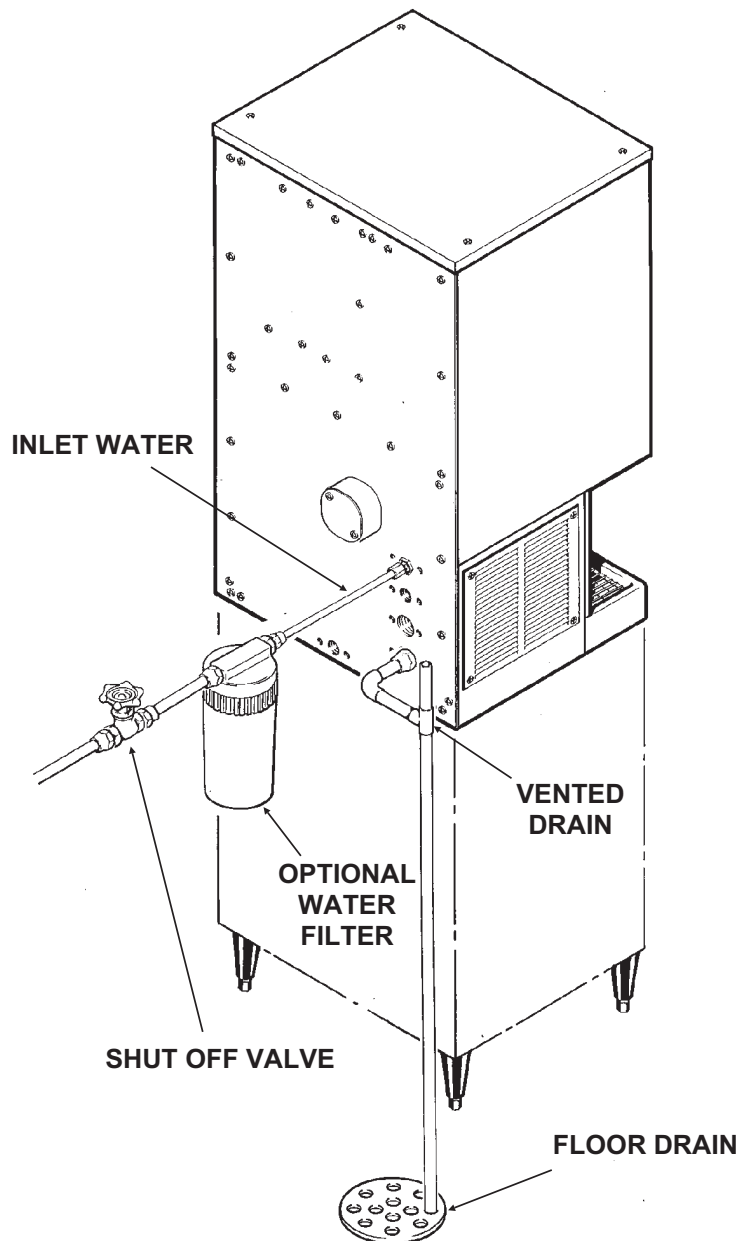
**Air Cooled Models:** Connect a clean, potable and cold water supply to the  $\frac{3}{8}$ " male flare at the back of the cabinet. Install a hand valve near the machine to control the water supply. Use  $\frac{3}{8}$ " O.D. copper tubing.

**Water Treatment:** In most areas, a water filter of some type will be useful. In areas where the water is highly concentrated with minerals the water should be tested by a water treatment specialist, and the recommendations of the specialist regarding filtration and/or treatment should be followed.

**Water Cooled Models:** Connect a separate  $\frac{3}{8}$ " O.D. copper line, with a separate hand valve to control it, to the  $\frac{3}{8}$ " FPT condenser inlet at the back of the cabinet. The water pressure to all lines must always be above 20 psig, and below 120 psig.

#### Drains

**Air Cooled Models:** Connect a drain tube to the one  $\frac{3}{4}$ " FPT drain fitting (plastic) at the back of the cabinet, the drain line is of the gravity type, and  $\frac{1}{4}$  inch per foot fall is an acceptable pitch for the drain tubing. There should be a vent at the highest point of the drain line, and the ideal drain receptacle would be a trapped and vented floor drain. Use only  $\frac{3}{4}$ " rigid tubing.



**Water Cooled Models:** In addition to the above mentioned drain, a separate condenser drain line must be installed. Connect it to the  $\frac{1}{2}$ " condenser drain connection at the back of the cabinet.

## FOR THE ELECTRICIAN

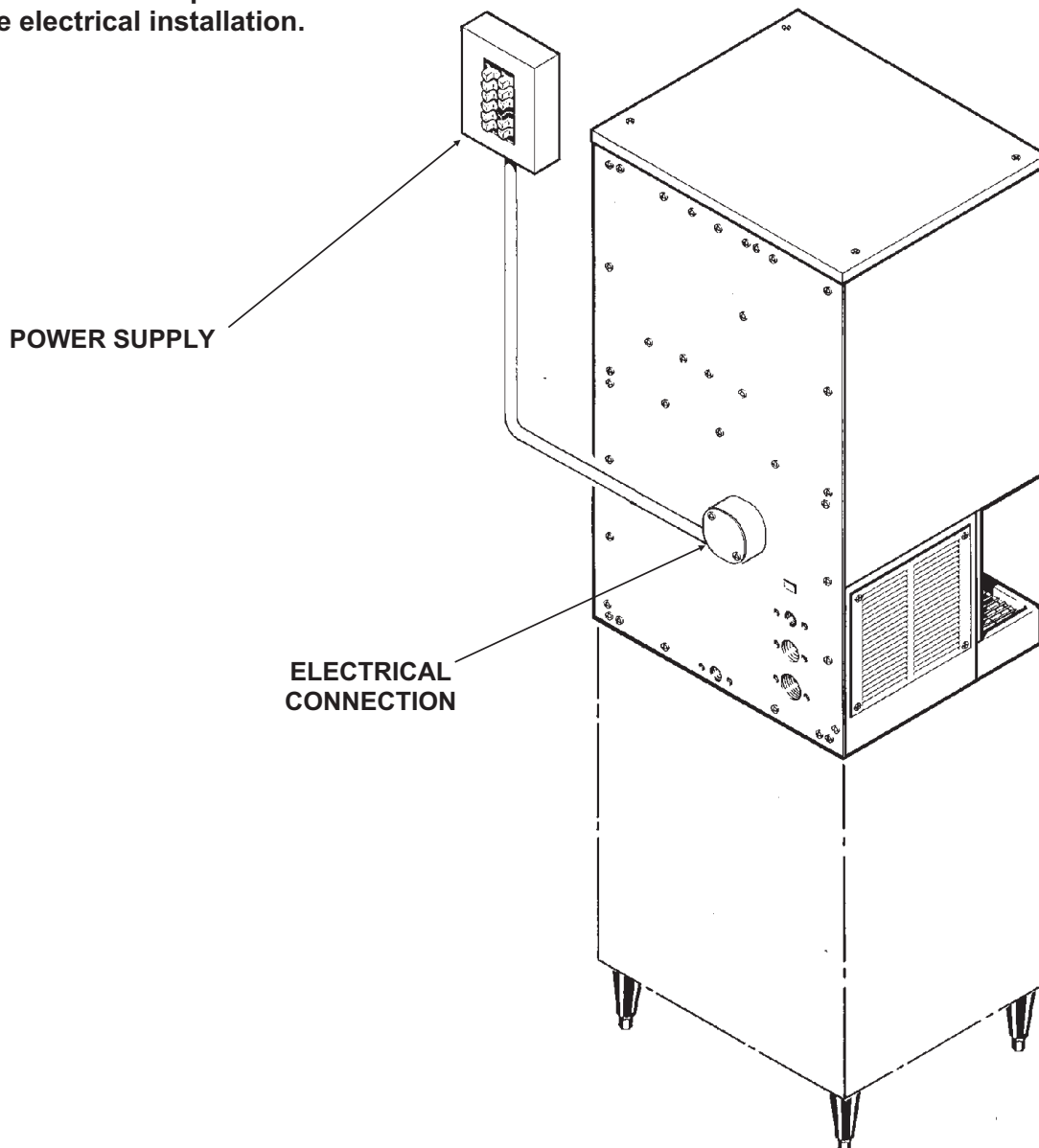
**CONFORM TO ALL APPLICABLE CODES**

Connect the electrical power supply for the unit to the wires in the junction box at the rear of the machine.

Check the nameplate (located on the back panel) for the voltage requirements, and for the minimum circuit ampacity. The machine requires a solid chassis to earth ground wire.

The ice maker should be connected to its own electrical circuit so it would be individually fused. Voltage variation must remain within design limitations, even under starting conditions.

**All external wiring must conform to national, state, and local electrical codes. The use of a licensed electrician is required to perform the electrical installation.**

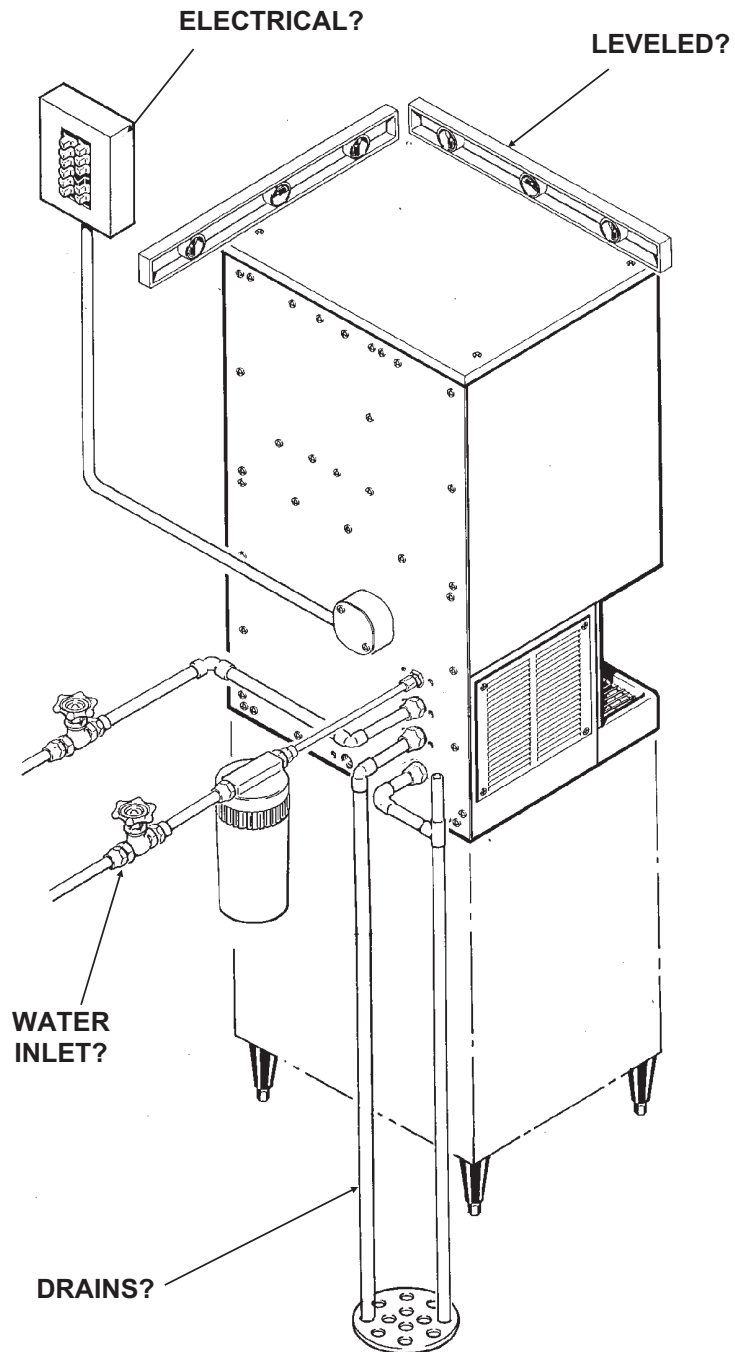


# NDE754

## FOR THE INSTALLER: Final Check List

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1. Is the icemaker-dispenser installed indoors, in a location where the air and water temperatures are controlled, and where they do not go beyond design limitations?
2. Is there an electrical service disconnect within sight of the installed machine? Is the machine on a separate circuit? Has the voltage been checked and compared to nameplate requirements?
3. Have all of the plumbing connections been made and checked for leaks?
4. Has the machine been leveled?
5. Is there a minimum of 6 inches of clearance at the left and right sides of an air cooled machine?
6. Is there a minimum of 6 inches of clearance at the top and back of the machine for service and utility connections?
7. Is there a water shut off valve installed near the machine?
8. Have all of the shipping blocks been removed?



## INITIAL START UP

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### Pre Start Inspection

1. Remove the two front panels.
2. Check that all shipping blocks have been removed.
3. Remove any and all packing tape (check inside the storage bin).
4. Inspect the interior of the machine for loose screws or wires. Check that no refrigerant lines are rubbing each other. Check that the fan blade on air cooled models turns freely.
5. Check that the machine is installed correctly according to the final check list.

### Start Up

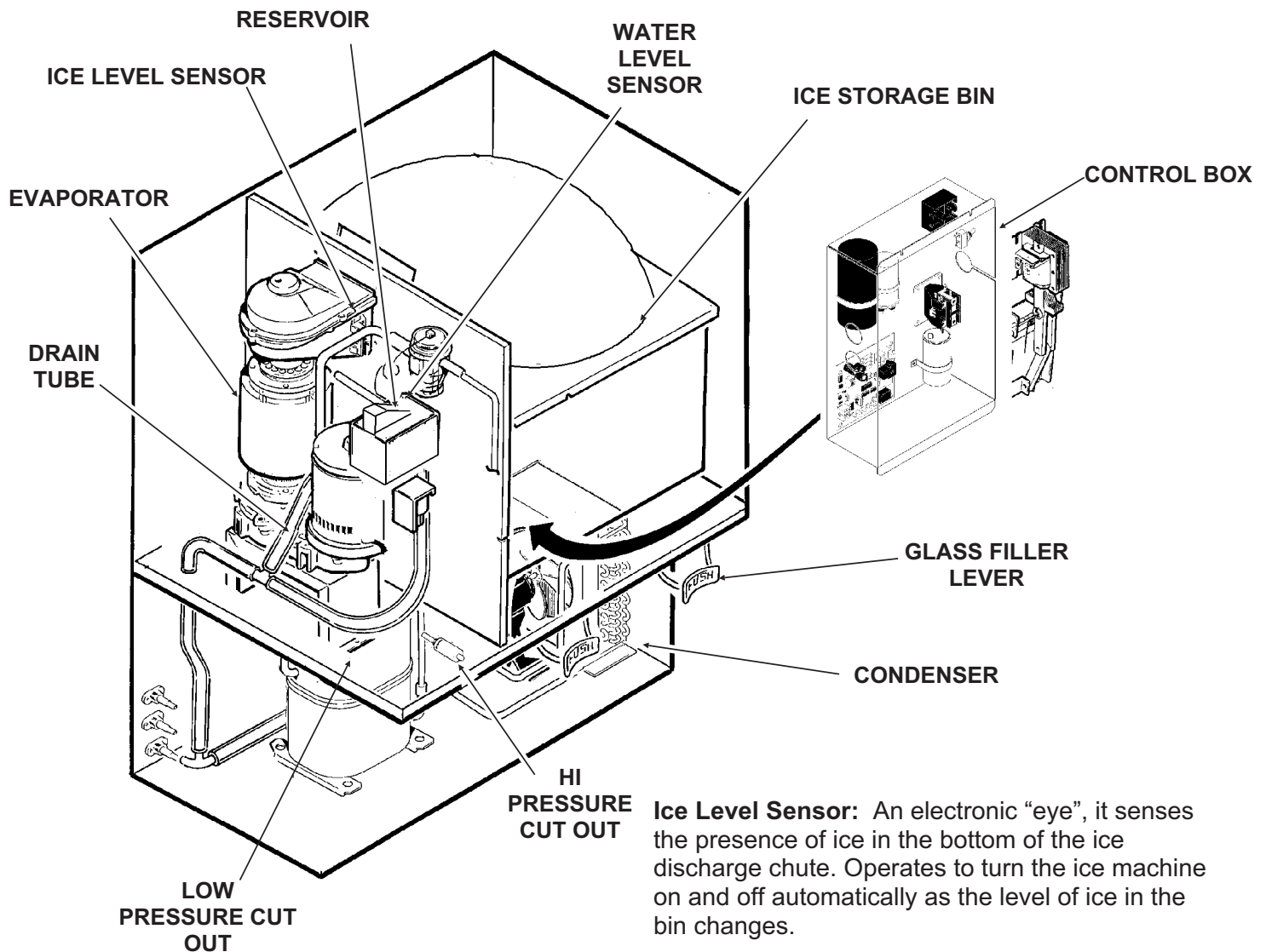
1. Go through the pre start inspection.
2. Open the water hand valve, observe that water enters the water reservoir, fills the tube from the reservoir to the evaporator and then shuts off. Check for leaks.
3. Switch the mode switch to ON. The auger drive motor and compressor start, beginning the ice making process.
4. On air cooled models, warm air will begin to flow from the condenser. Water cooled models will begin to discharge warm water down the drain.
5. The unit should soon be making ice. If desired, the low side pressure may be checked: it should be 38 PSIG + or - 4 PSIG.  
The air cooled discharge pressure will depend upon air and water temperatures, but should be between 200 PSIG and 300 PSIG.  
Water cooled discharge pressure should be about 245 PSIG. If needed, adjust the water regulating valve.  
The above numbers are for new, clean machines. Field values may be somewhat higher or lower.
6. There are no adjustments to make, so replace the panels.
7. Check ice dispensing by pushing in on the glass filler lever. Ice dispenses are portion controlled; by turning a knob, the length of time the unit dispenses when the glass filler lever is pushed (and the amount of ice dispensed) is adjusted.
8. Switch off the icemaker-dispenser, remove the top panel and the top of the ice storage bin. Sanitize the interior of the ice storage bin with a locally approved sanitizer. A possible sanitizer is a mixture of 1 ounce of household bleach to 2 gallons of water. Wash the interior of the bin with the sanitizing solution. Replace all covers and panels. Switch the icemaker-dispenser back on.
9. Give the owner/user the service manual, instruct him/her in the operation and maintenance requirements of the unit. Make sure they know who to call for service.
10. Fill out the Customer Evaluation and warranty Registration form, and mail it in to Scotsman.



# NDE754

## COMPONENT DESCRIPTION

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**Control Box:** Contains the electrical controls that operate the machine.

**High Pressure Cut Out Switch:** An automatic reset switch sensing the high side refrigeration pressure. It is set to shut the machine off if the discharge pressure should ever exceed 450 psig.

**Evaporator:** A vertical stainless steel tube, refrigerated, and water filled. In it there is a stainless steel auger.

**Reservoir:** Float operated, it maintains the water level in the evaporator at a constant level, it also contains the water level sensor.

**Water Level Sensor:** Senses if there is water in the reservoir to make ice out of. Will shut the machine off if there is none.

**Low Pressure Cut Out Switch:** An automatic reset control that shuts off the ice machine when the low side pressure drops below a preset point, 15 psig.

**Ice Level Sensor:** An electronic “eye”, it senses the presence of ice in the bottom of the ice discharge chute. Operates to turn the ice machine on and off automatically as the level of ice in the bin changes.

**Drain Tube:** When uncapped and lowered, drains the evaporator.

**Condenser:** Air or water cooled, where the heat removed in ice making is discharged.

**Ice Storage Bin Assembly:** A plastic lined, insulated cylinder that receives, stores and dispenses the ice. Fresh ice enters at the top, and when the bin is full enough the ice will be between the ice level sensors, and the icemaking will stop. Ice is dispensed through a chute at the bottom front when the agitator assembly sweeps the ice through the chute.

**Glass Filler Lever:** Pushing in on this lever causes the ice dispensing cycle to occur.



## COMPONENT DESCRIPTION

**Evaporator:** A refrigerated vertical tube filled with water and containing a water seal and auger.

**Auger:** A solid stainless steel double spiral auger, it pushes the ice crystals up to the top of the evaporator.

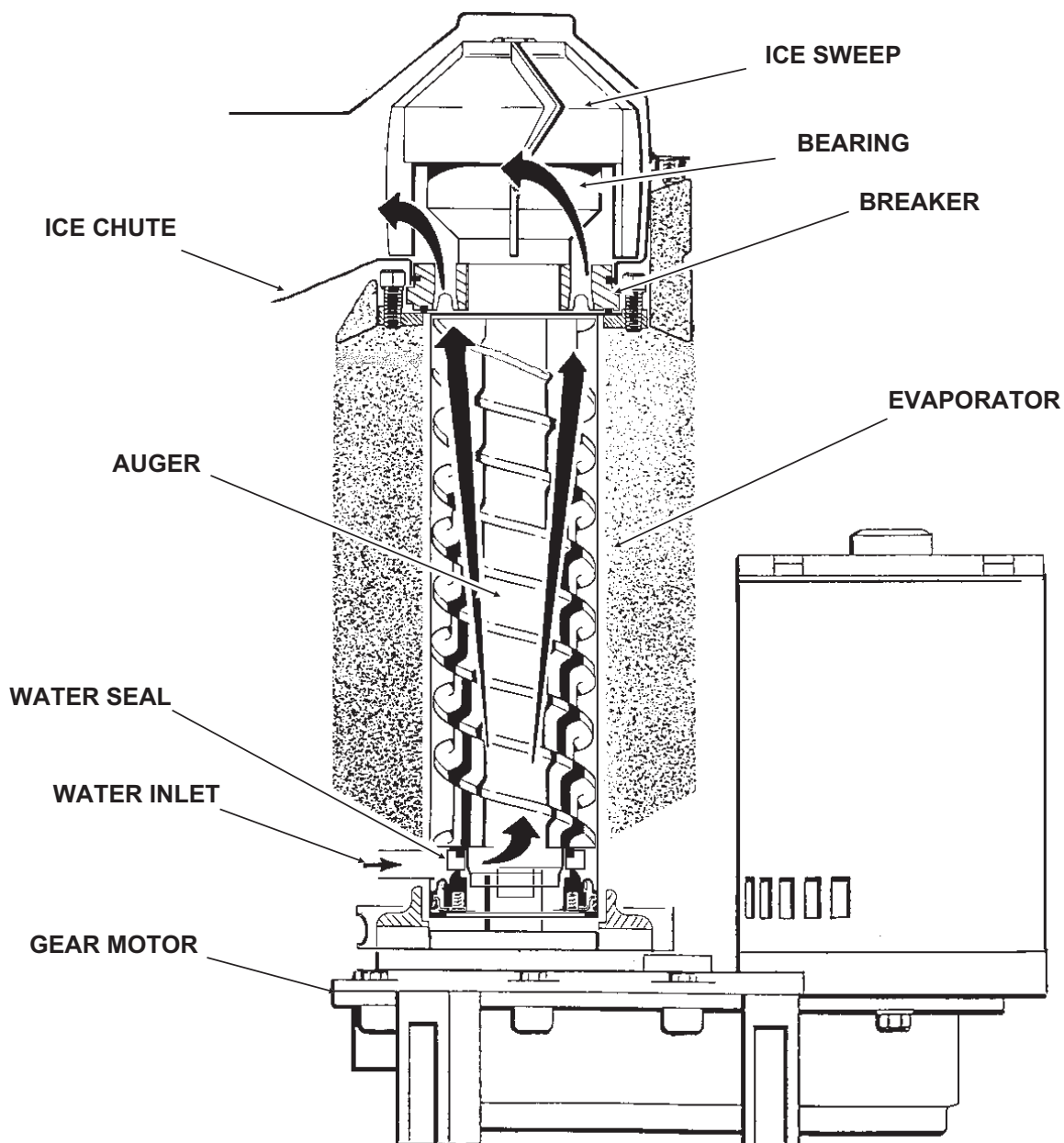
**Water Seal:** A two part "face" seal, the top half rotating with the auger, the bottom half stationary, the sealing action being where the two seal "faces" meet.

**Ice Sweep:** A plastic cap with "fingers". It revolves with the auger to "sweep" the ice into the ice chute.

**Breaker:** Where the ice is compressed and much of the extra water is squeezed out of it before it is discharged into the bin.

**Motor:** A split phase motor that drives the gear reducer.

**Thrust Bearing:** As the ice is pushed up the evaporator, the auger is thrust down, and pressure from the auger thrust is taken up by this bearing.



# NDE754

## Control Box

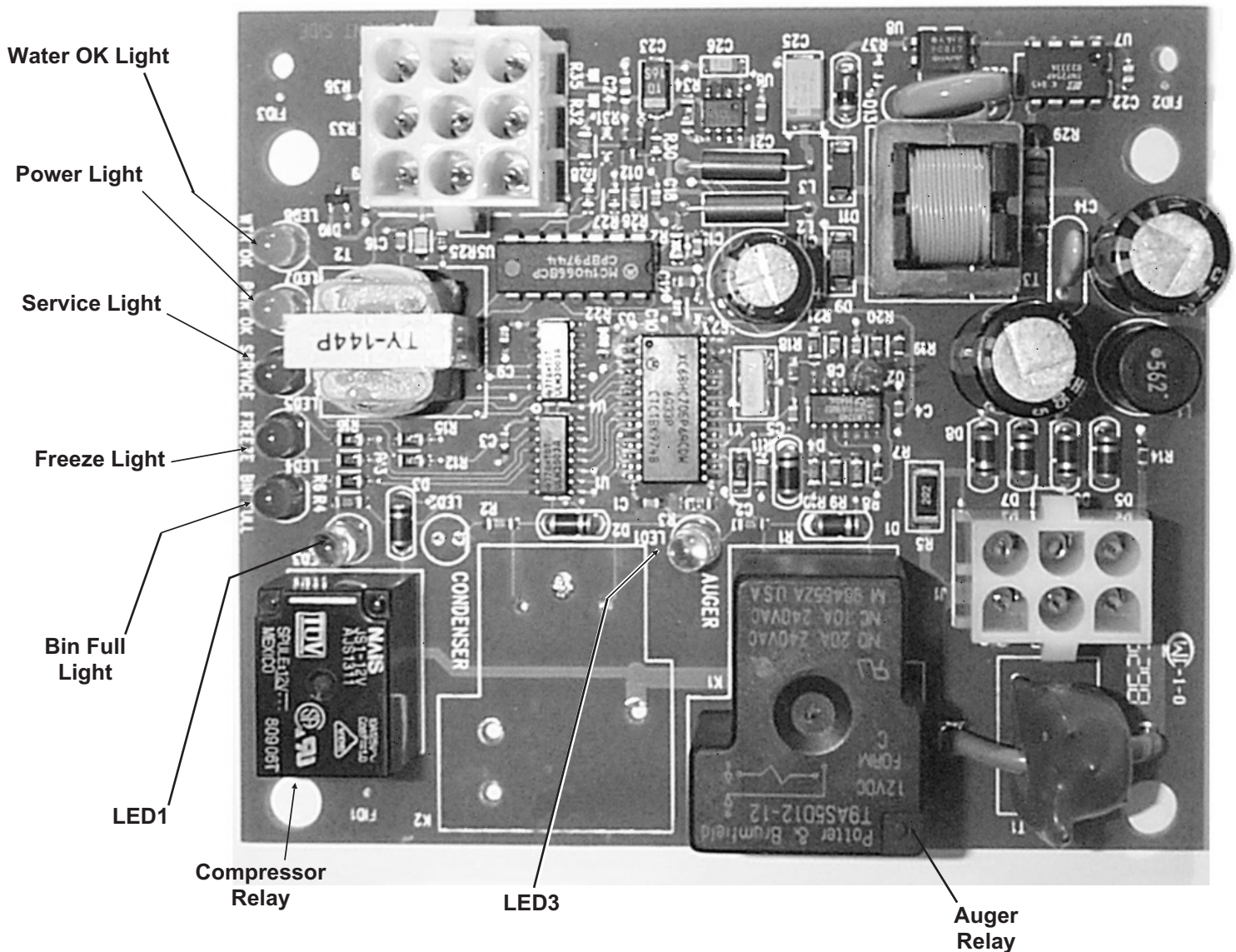
**Contactor:** A definite purpose contactor connecting the compressor to the power supply.

**Circuit Board:** Controlling the ice machine through sensors and relays. The sensors are for ice level and water level. The relays are for the gear motor (with a built in time delay to clear the evaporator of ice when the unit turns off) and for the compressor.

**Mode Switch:** Manual control for the machine.

**Potential Relay:** The compressor start relay.

*Control Board*



## ELECTRICAL SEQUENCE

There are 7 indicator lights on the control board:

- **WTR-OK.** Water OK. Normal = Glowing. Glows when there is water in the reservoir.
- **PWR-OK.** Power OK. Normal = Glowing. Glows when the control board has power **and** is functional.
- **Service.** Normally Off.
- **Freeze.** Normally Glowing when making ice.
- **Bin Full.** Normally Off when making ice.
- **LED1.** Normally Glowing when making ice.
- **LED3.** Normally Glowing when making ice.

If the machine is switched off at the mode switch, but is otherwise ready to go, switching the mode switch to ON does the following:

- The PWR-OK light glows.
- If there is water in the reservoir the WTR-OK light glows.
- After 10 seconds the Freeze, LED1 and LED3 lights glow and the machine starts up.

### Start Up:

- The compressor relay and auger motor relay become energized, connecting power to the windings of the auger motor and contactor coil.
- The contactor is energized, connecting power to the compressor, and the compressor starts.
- During normal operation ice passes between the ice level sensors but only interrupts their infrared beam momentarily. The bin full light remains off and the machine stays on until ice builds up in the bin and blocks the path between the sensors for 6 seconds or longer. When that occurs the bin full light glows and the machine shuts down.

### Ice Vending

When the glass filler lever is pushed in the vend switch closes connecting power to the ice chute door solenoid and agitator drive motor.

**Optional Portion Control:** The portion control module will power the agitator drive motor for a set length of time. The amount of time is controlled by the setting of the portion control knob.

Holding the glass filler lever in will not cause additional dispensing, unless the portion control is set for continuous dispensing. Releasing and re-pushing the glass filler lever will repeat the dispense cycle.

### Shut Down:

- The compressor relay opens, LED1 goes out.
- The compressor contactor opens
- The compressor stops
- The auger motor stays on for 1 more minute, clearing out ice in the evaporator, and then
- The auger motor relay opens, LED3 goes out and the auger motor stops.

The compressor will not restart until 2 minutes or more have passed after the last shut down. If the path between the ice level sensors remains clear for more than 10 seconds the machine will restart.

Another purpose of the control board is to turn the machine off when necessary:

- When the water level in the reservoir falls below the water level sensor's tip, the WTR-OK light goes out and the machine shuts down. When water refills the reservoir the WTR-OK light glows and the machine starts up again.
- If the auger drive motor current becomes excessive the compressor and auger drive motor will be switched Off and the Service light will blink. The control board will restart the auger drive motor in 4 minutes. If during the first 60 seconds after restart the auger motor current stays within limits, the compressor is restarted and the machine returns to normal operation. If the current is excessive within 60 seconds after the restart, the process will be repeated once more. If after that try the current is still excessive the machine shuts down and must be manually reset. The service light will then be glowing continuously.

### To Reset: Disconnect and reconnect power to the ice machine.

Separate from the circuit board:

- If the high pressure cut out switch opens the machine stops immediately. It automatically resets when the pressure drops below its cut in point.
- If the low pressure cut out switch opens the machine will stop immediately. It automatically resets when the pressure rises over its cut in point.
- The mode switch is the manual control for the complete machine, but it is not a service disconnect.

# NDE754

## OPERATION: Water

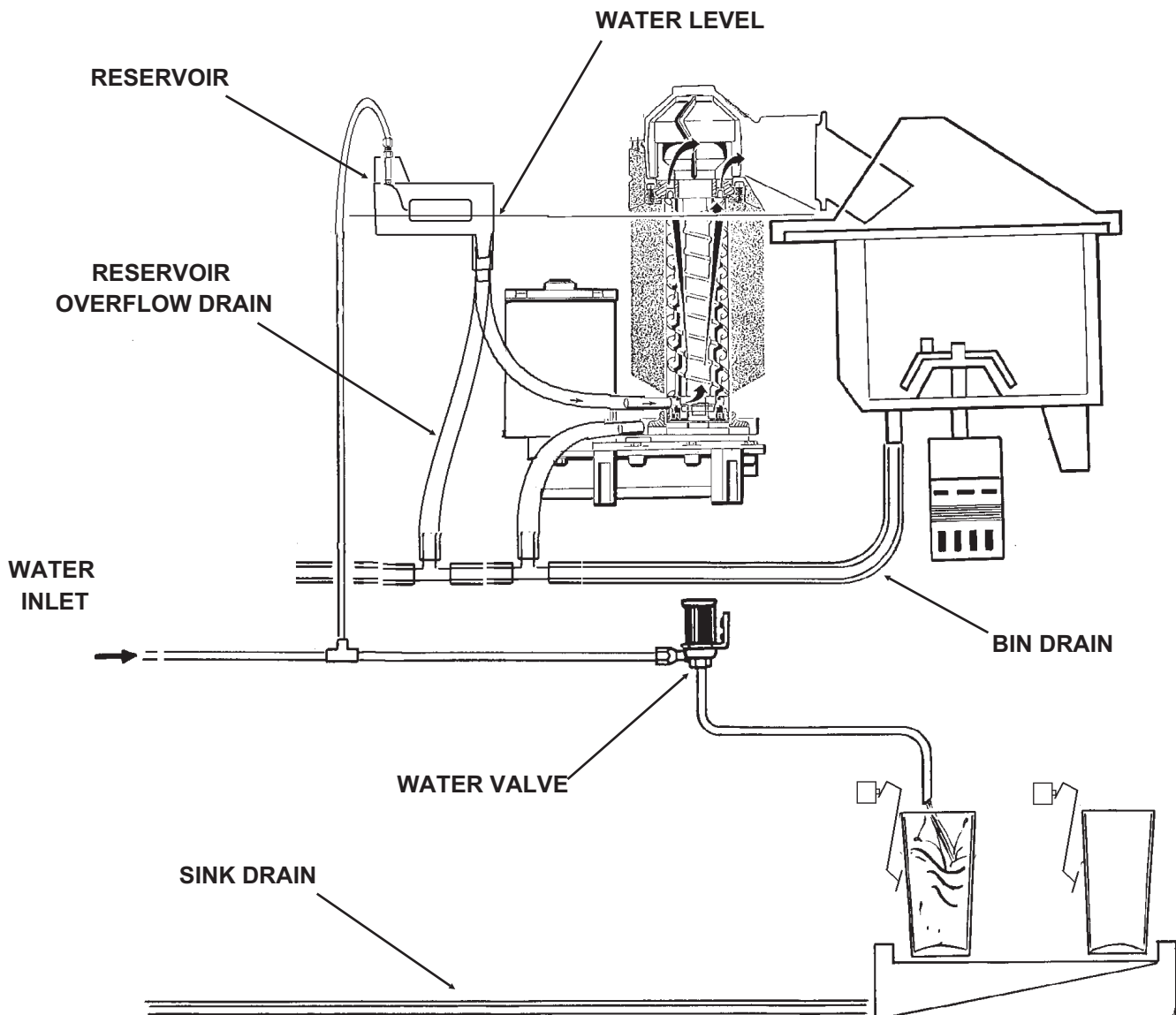
Water enters the machine through the 3/8" male flare at the rear of the cabinet, goes to a strainer and then to the water reservoir which it enters through the float valve. The water then goes out the bottom of the reservoir tank to the bottom of the evaporator.

Reservoir overflow, evaporator condensation and water in the sink are all routed to the drain. Water cooled models have a separate water circuit for the cooling water: it enters the fitting at the rear, goes to the water regulating valve, then to the water cooled condenser and down the drain.

The water dispensing station adds an additional water circuit. When the water station glass filler lever is pushed, a switch closes a circuit to an electric water valve, and water is dispensed.

**Note: The correct water level is determined when the machine is operating. Check the water level and compare it to the line molded into the side of the reservoir. The water level should be between  $\frac{1}{8}$ " above and  $\frac{1}{4}$ " below the line.**

**If needed, adjust the water level by bending the float arm.**

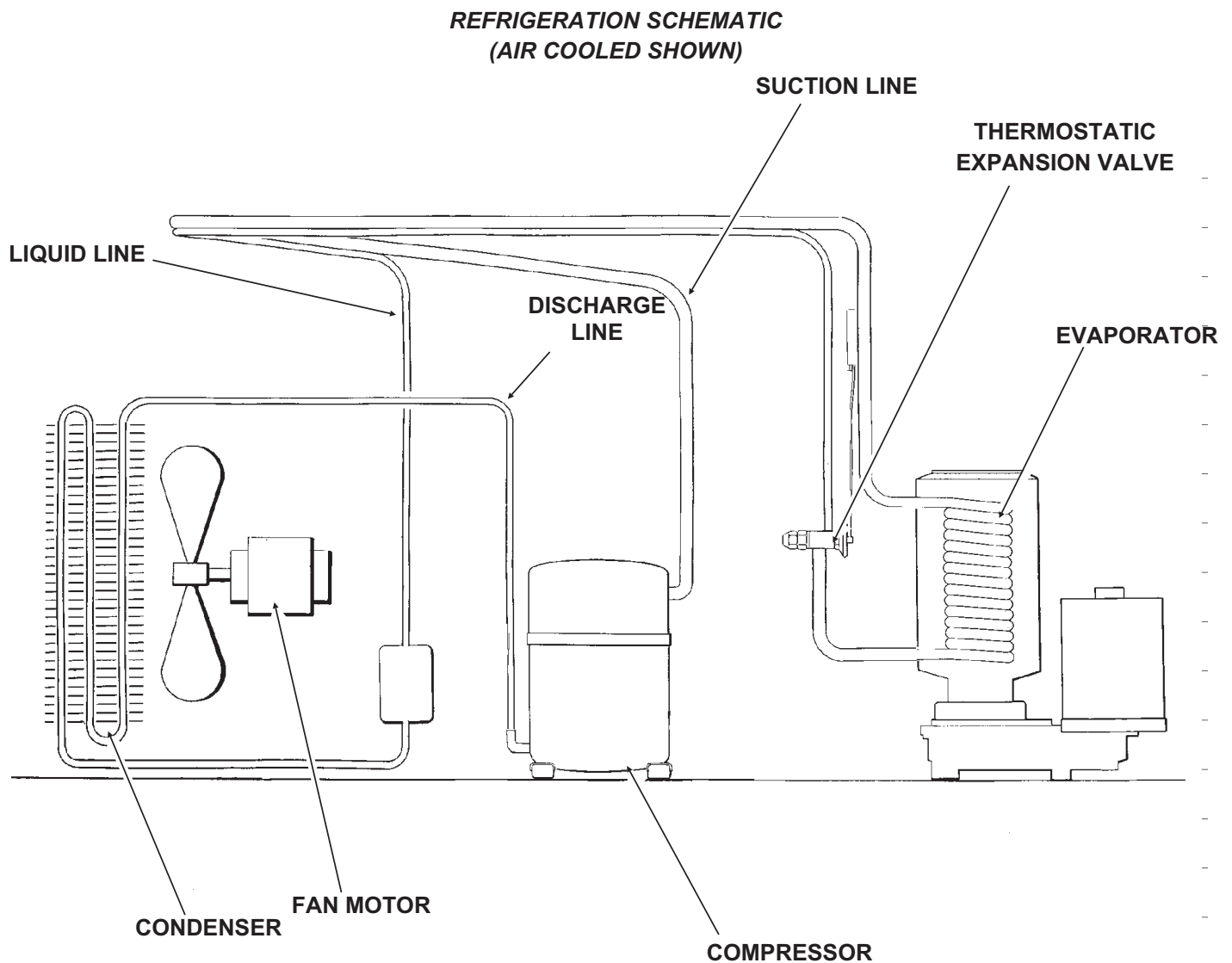


WATER SCHEMATIC

## OPERATION: Refrigeration

Beginning at the compressor, the refrigerant is compressed into a high temperature gas. The discharge line directs this gas to the condenser. At the condenser (air or water cooled) the gas is cooled by either air or water and it then condenses into a liquid. This high pressure liquid then goes through the liquid line to the expansion valve. The thermostatic expansion valve meters liquid refrigerant into the evaporator, the volume of liquid refrigerant depending upon the temperature of the evaporator; warmer evaporators get more refrigerant and colder evaporators get less.

At the evaporator, the refrigerant enters an area of relatively low pressure, where it can easily "boil off" or evaporate. As it evaporates, it absorbs heat from the evaporator and whatever is in contact with it (such as the water inside it). After the evaporator, the refrigerant, now a low pressure vapor, goes through the suction line back to compressor, where the cycle is repeated.



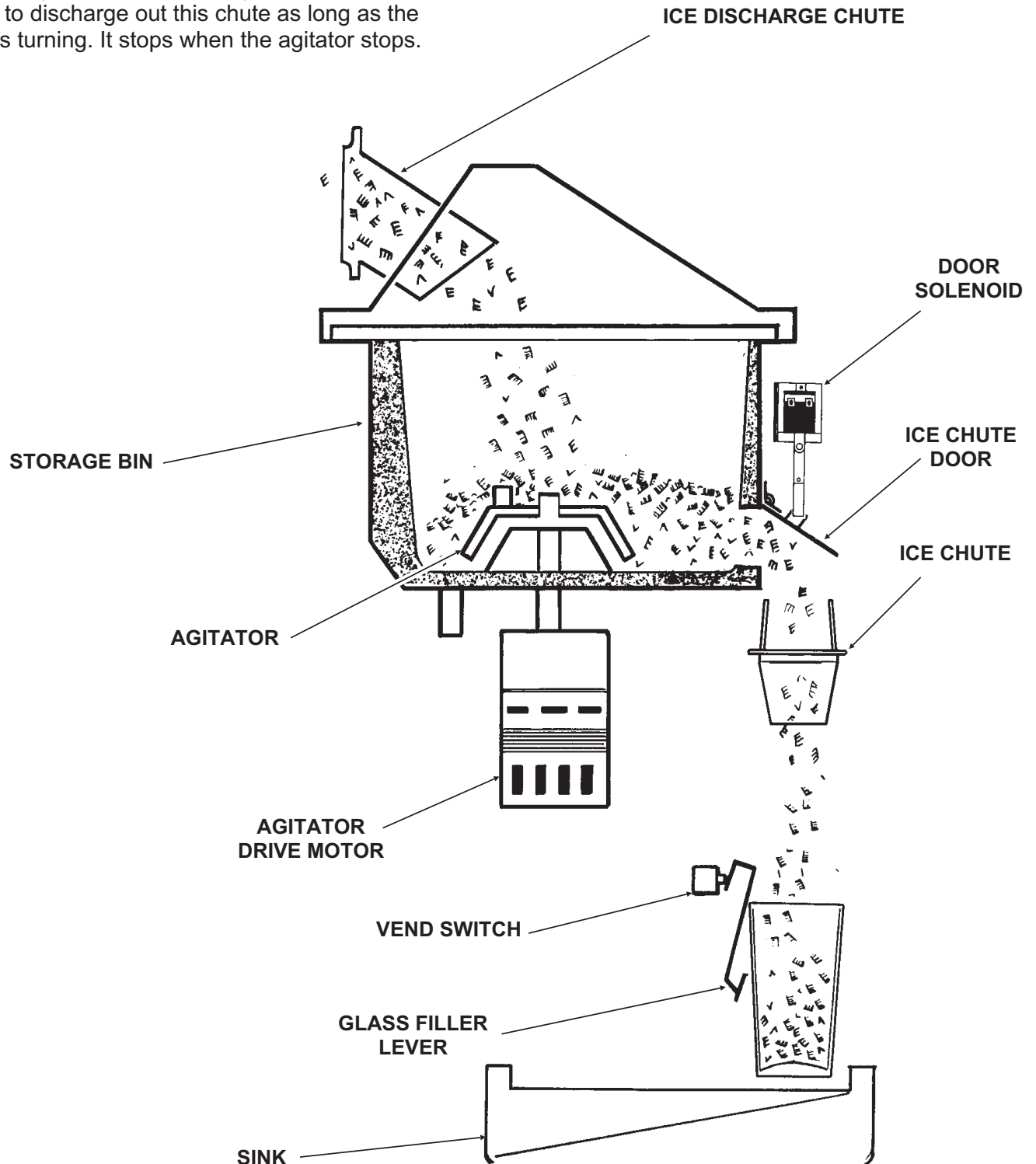


# NDE754

## OPERATION: Ice Vending

When the ice dispensing glass filler lever is pushed, an electrical circuit is made to the ice chute door solenoid causing the ice chute door to open. At the same time power is connected to the agitator drive motor.

Dispensing takes place when the agitator sweeps the ice through the ice dispensing chute: ice will continue to discharge out this chute as long as the agitator is turning. It stops when the agitator stops.



## CLEANING and SANITIZING

It is the USER'S RESPONSIBILITY to see that the unit is properly maintained. It is always preferable, and less costly in the long run, to avoid possible down time by keeping it clean; adjusting it as needed; and by replacing worn parts before they can cause failure. The following is a list of recommended maintenance that will help keep the machine running with a minimum of problems.


Cleaning should be scheduled at a **minimum of twice per year**.

**Sanitizing of the ice storage bin should be scheduled for a minimum of 4 times a year.**

**Electrical power will be ON when doing in place cleaning.**

### ICEMAKING SYSTEM: In place cleaning

1. Check and clean any water treatment devices, if any are installed.
2. Remove screws and remove the upper front panel.
3. Move the ON-OFF switch to OFF.
4. Remove the cover to the ice storage bin, and remove the ice.
5. Remove the cover to the water reservoir and block the float up.
6. Drain the water reservoir and freezer assembly using the drain tube attached to the freezer water inlet. Return the drain tube to its normal upright position and replace the end cap.
7. Prepare the cleaning solution: Mix eight ounces of Scotsman Ice Machine Cleaner with three quarts of hot water. The water should be between 90-115 degrees F.

<p><b>Scotsman Ice Machine Cleaner contains acids.</b></p> <p>These compounds may cause burns. If swallowed, DO NOT induce vomiting. Give large amounts of water or milk. Call Physician immediately. In case of external contact, flush with water. Keep out of the reach of children.</p>	<p><b>⚠ WARNING</b></p> 
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8. Slowly pour the cleaning solution into the water reservoir until it is full. Wait 15 minutes, then switch the master switch to ON.
9. As the ice maker begins to use water from the reservoir, continue to add more cleaning solution to maintain a full reservoir.

10. After all of the cleaning solution has been added to the reservoir, and the reservoir is nearly empty, switch the master switch to OFF.

11. After draining the reservoir, as in step 6, wash and rinse the water reservoir.

### To Sanitize:

Repeat steps 8-11, except substitute sanitizer solution for the cleaning solution.

A possible sanitizer solution may be made by mixing 1 ounce of household bleach and 2 gallons of warm (95°F. - 115°F.) potable water.

12. Remove the block from the float in the water reservoir.

13. Switch the master switch to ON

14. Continue ice making for at least 15 minutes, to flush out any cleaning solution. Check ice for acid taste - continue icemaking until ice tastes sweet.

**DO NOT USE any ice produced from the cleaning solution.**

**Be sure no ice remains in the bin.**

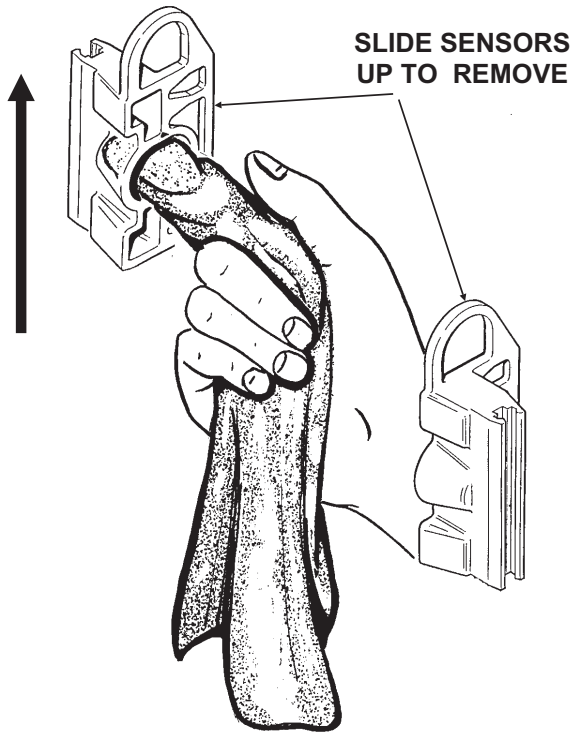
15. Remove all ice from the storage bin.
16. Add warm water to the ice storage bin and thoroughly wash and rinse all surfaces within the bin.
17. Sanitize the bin interior, cover, door and agitator with an approved sanitizer using the directions for that sanitizer.
18. Replace the ice storage bin cover, and the front panel.



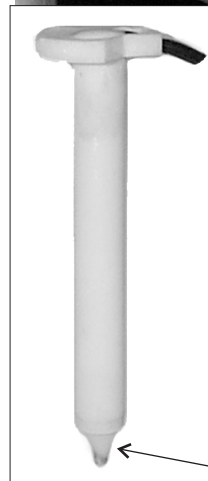
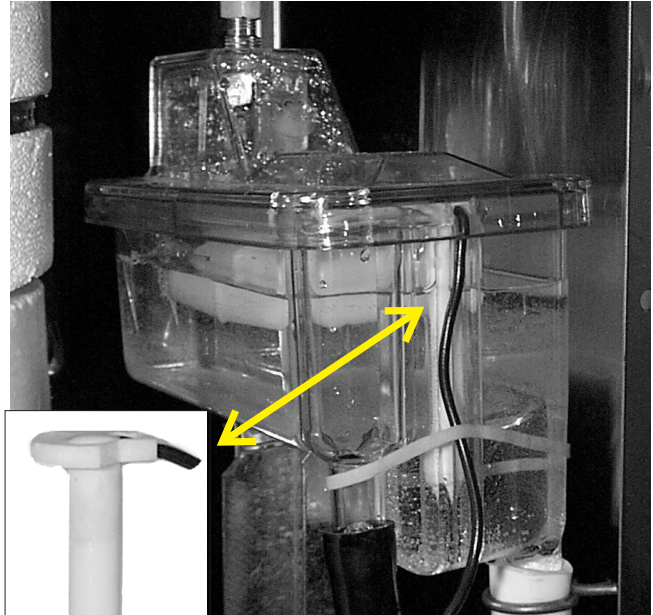
# NDE754

## SENSOR MAINTENANCE

1. The ice machine senses water level by a probe located in the water reservoir. At least twice a year, the probe should be removed from the reservoir, and the tip wiped clean of mineral build-up.



2. The bin control uses devices that sense light, therefore they must be kept clean enough so that they can "see". At least twice a year, remove the bin control sensors from the ice chute, and wipe them clean.



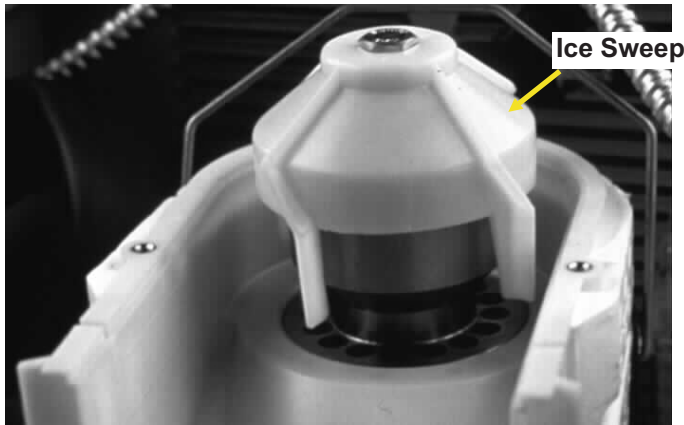
Clean the Probe's Tip with ice machine cleaner and a clean, soft cloth.

## BEARING MAINTENANCE

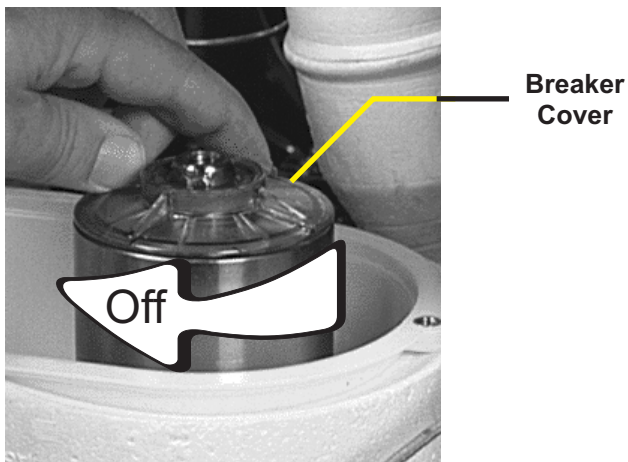
The bearing in the breaker should also be checked at least **two times per year**.

A. Check the bearing by:

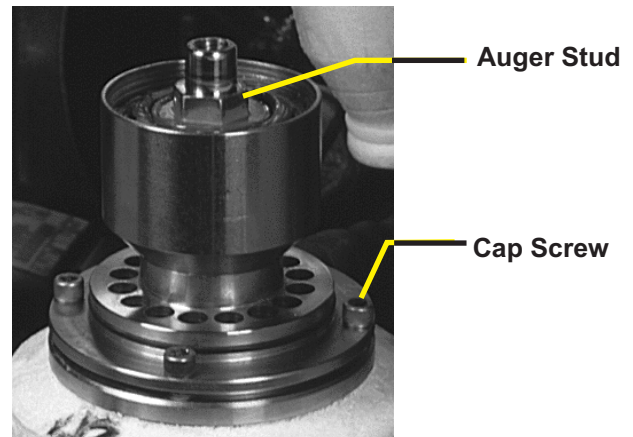
- removing the ice chute cover



- unscrewing the ice sweep
- removing the water shed



- unscrewing the breaker cover.



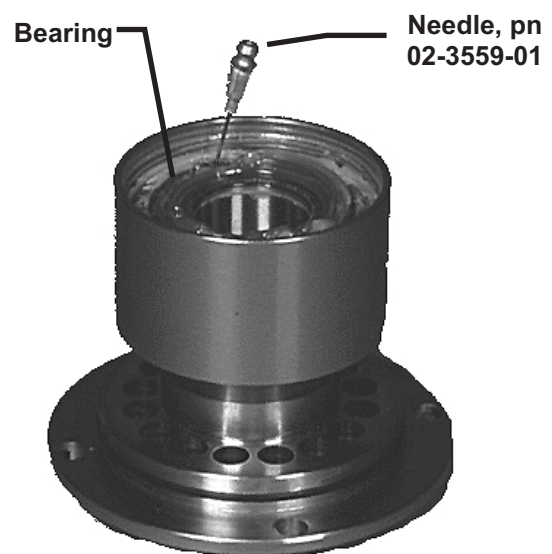
- unscrewing the auger stud

Inspect the bearing. There should be plenty of grease in sight. If grease is needed the bearing and breaker should be removed to check the action of the bearing. It should rotate smoothly.

To remove the breaker remove the lower ice chute then take out all four allen head cap screws and pull the breaker off the auger and evaporator.

If the bearing only needs grease, inject grease into the bearing using Scotsman grease needle pn 02-3559-01 and Scotsman bearing grease cartridge, pn A36808-001. Be sure to inject grease evenly and thoroughly.

See Removal and Replacement section to replace bearing or seals.



Reverse to reassemble.


# NDE754

## AUGER MAINTENANCE

In some areas, the water supply to the ice maker will contain a high concentration of minerals, and that will result in an evaporator and auger becoming coated with these minerals, requiring a more frequent removal than twice per year. If in doubt about the condition of the evaporator and auger, the auger can be removed so the parts can be inspected.

Note: Water filters can filter out suspended solids, but not dissolved solids. "Soft" water may not be the complete answer. Check with a water treatment specialist regarding water treatment.

**For more information on removal of these parts, see REMOVAL AND REPLACEMENT.**

	<p><b>⚠ WARNING</b></p> <p><b>Moving Parts Hazard.</b> Disconnect electrical power to the icemaker - dispenser before beginning.</p>
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**Disconnect electrical power, and shut off the water supply.**

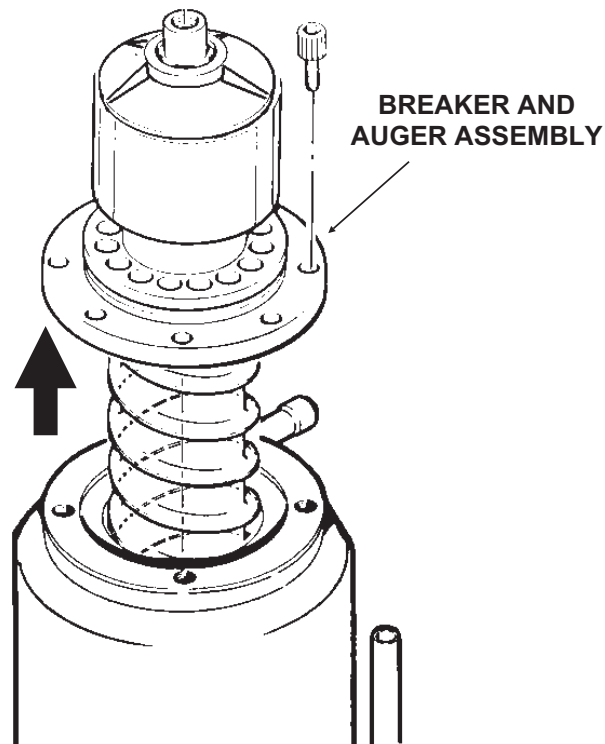
**Use care when removing the auger, it has sharp edges.**

1. To remove the auger, remove the front and top panels.
2. Drain evaporator using drain hose.
3. Remove bail clamp from over ice chute cover and remove cover.
4. Unscrew and remove ice sweep.
5. Remove ice chute from evaporator.
6. Remove 4 allen screws holding breaker to evaporator.
7. Pull up to remove auger.

After the auger has been removed, allow the auger to dry: if the auger is not bright and shiny, it must be cleaned.

Clean the auger and evaporator as required. **DO NOT HONE THE EVAPORATOR.**

8. Replace the water seal.
9. Reverse to reassemble.



## SERVICE DIAGNOSIS

Symptom	Possible Cause	Probable Correction
No ice is made, nothing operates	Unit off due to no power	Restore Power
	Unit off due to master switch in OFF position.	Switch master switch to ON.
	Unit off due to low water level.	Check water supply, filter, strainer, float valve. Correct water supply.
	Unit off due to ice level sensors (photo-electric eyes) blocked.	Check/clean ice level sensors.
	Unit off due to scale on water level sensor.	Clean water level sensor.
	Unit off due to high pressure control open.	Check for water interruption (water cooled) or fan motor failure (air cooled).
	Auger motor hums but does not turn.	Auger can't turn. Circuit board has not yet shut unit down.
	Unit is shut down	Circuit board has shut ice machine down due to high auger motor amp draw. Check for cause of high amp draw, including bearings, gearmotor condition and scale on auger and in evaporator.
	Low pressure control open	Auger not turning due to: motor failure; auger relay failure on circuit board; or gears stripped. Check drive train.
		TXV restricted or not metering. Check bulb temperature.
		Lack of refrigerant. Check for leak.
		Check for a restricted system
	No power to circuit board.	Check harness
		HI or low pressure cut out open
	Circuit Board gear motor relay will not close	Check, replace board
	Water level or ice level sensor failed.	Check, replace sensor
No ice, auger motor is turning	Compressor contactor coil is open	Check/replace contactor
	Compressor will not start	Check start capacitor.
		Check start relay
		Check compressor windings
	Circuit board compressor relay will not close.	Check, replace board
Unit makes ice, but very slowly.	High discharge pressure because of a dirty condenser	Clean the air filter and condenser.
	Low capacity because the auger and evaporator are coated with mineral scale	Clean the water system
	Low suction pressure due to low refrigerant charge	Locate leak. Recover refrigerant, repair leak, replace dryer, evacuate and weigh in the nameplate charge

# NDE754

## CONTROL SYSTEM DIAGNOSTICS

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The control system consists of:

- Control Board
- Water Sensor
- Ice Sensors
- High Pressure Cut Out
- Low Pressure Cut Out

If the unit is OFF, check the **control board**:

1. Is the Power OK light on? If not check power to the unit. If it has power, and the Power OK light is NOT on, check the high pressure and low pressure cut outs. If they are both closed, replace the board. If the Power OK light is ON, go to the next step.

2. Is the Water OK light on? If it is, go to the next step. If not, check the water level in the reservoir. If there is water in the reservoir, check that the water sensor is plugged in. To check the **water sensor**:

A. Unplug water sensor.

B. Pull water sensor from reservoir.

C. Place one ohmmeter lead on the sensor's plug and the other on the sensor's tip. The meter should show nearly zero resistance. If it reads infinite resistance, check the tip for corrosion. If it is clean and still reads open, replace the sensor.

OR connect a copper wire to the wire where the water sensor plugs into and place the other end in the water. The water OK light should go ON. If it does not, replace the control board.

3. **Ice sensor check.** Is the Bin Full light Off? If it is OFF and the Service light is Off, and the unit is not running, replace the control board.

If it is OFF and the auger motor is running but the compressor is not, check the compressor contactor coil.

If it is on, the ice sensors may be blocked. Remove them and check for mineral scale. Scotsman's test box can also be used to determine if the ice sensors or board are defective.

Using the tester:

A. Disconnect the ice sensors at the connection by the ice chute. Connect the LED and PHOTO TRANS wires to the control board's wires.

B. With the On - Off (mode) switch in either position, move the Bin Full switch on the tester to Bin Full - the tester's light will blink and after a few seconds the bin full light on the control board will come on. If not, replace the board.

Move the Bin switch on the tester to Bin Empty. The light on the tester will go out, and after a few seconds the Bin Full light on the board will go out. If master switch is ON, the unit should start.

4. **High pressure** cut out check.

Disconnect electrical power.

Pull the wires off the high pressure cut out.

Use an ohmmeter to determine if the switch is OPEN, If it is, check the discharge pressure. If the discharge pressure is less than 300 PSIG, replace the high pressure cut out.

If the high pressure cut out is open and the system has high discharge pressure, check for the cause.

5. **Low pressure** cut out check.

Disconnect electrical power.

Pull the wires off the low pressure cut out.

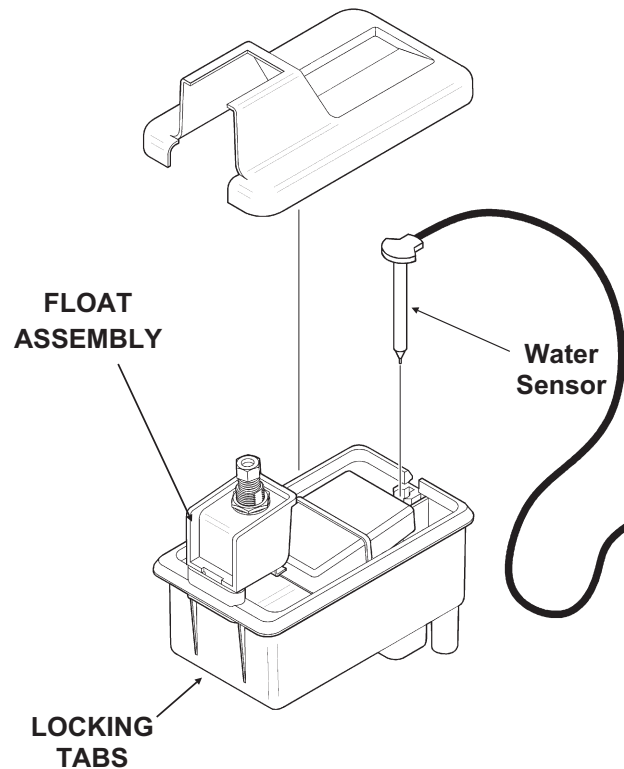
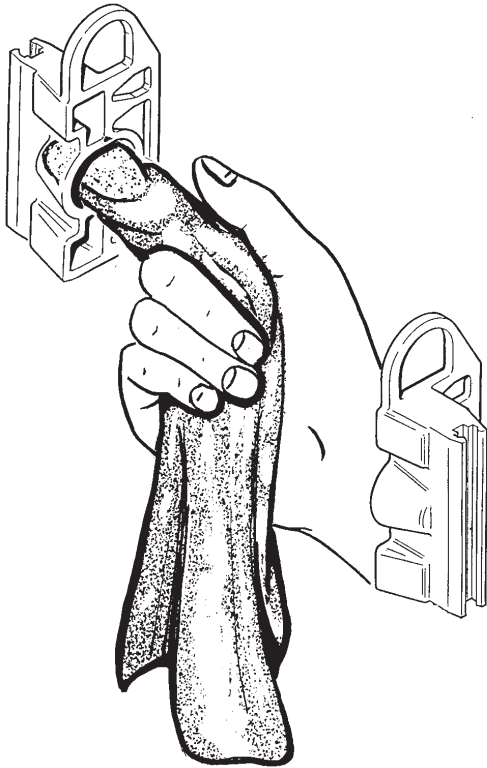
Use an ohmmeter to determine if the switch is OPEN, If it is, check the suction pressure. If the suction pressure is greater than 35 PSIG, replace the low pressure cut out.

If the low pressure cut out is open and the system has low suction pressure, check for the cause.

## REMOVAL AND REPLACEMENT

### WATER RESERVOIR

1. Shut off the water supply to the icemaker.
2. Remove front panel and reservoir cover.
3. To remove float only, pry the mounting flanges apart enough to lift one float pivot pin out of the flange hole, and pull float up and out of the reservoir.
4. To remove reservoir, disconnect water inlet compression fitting at reservoir inlet.
5. Remove drain hose from reservoir.
6. Remove evaporator inlet hose from reservoir.
7. Remove water level sensor probe.
8. Remove mounting screws from reservoir bracket, and remove reservoir from icemaker.
9. Reverse to reassemble.



### BIN CONTROLS (Ice Level Sensors)

1. Disconnect electrical power.
2. Remove front panel.
3. Remove control box cover.
4. Locate bin top, in front of and behind it are two rubber bin control grommets.
5. Pull each bin control out, and in the control box, disconnect the electrical leads connecting the bin control to the circuit board.
6. Reverse to reassemble, be certain that the bin controls are aligned so that the ice level sensors are visible (centered) through the holes in the ice chute.

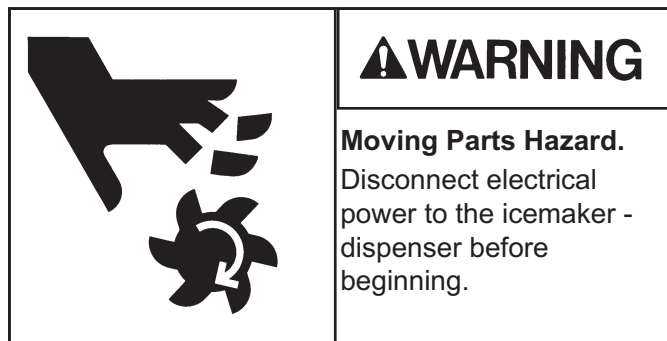


# NDE754

## REMOVAL AND REPLACEMENT: Bearing And Breaker

Note: Removal of the auger, water seal, evaporator and gearmotor must begin at the top of the assembly.

### To Remove the Breaker Bearing Assembly:



1. Remove panels and disconnect electrical power.
2. Unscrew three studs and remove ice chute cover.
3. Unscrew and remove ice sweep.
4. Lift up and remove ice chute.
5. The breaker may be removed from the auger and evaporator without disturbing the auger.
  - a. Unscrew breaker cover from breaker (left hand threads)
  - b. Unscrew auger stud from top of auger.
  - c. Unscrew 4 allen head cap screws holding breaker to evaporator.

d. Lift up, and remove breaker/bearing assembly from auger & evaporator.

6. Service the bearing. Check for rust, rough spots and damage.

a. The bearing is pressed into the breaker, to remove the bearing and replace it an arbor press is needed.

b. Replace lower seals before installing new bearing in breaker.

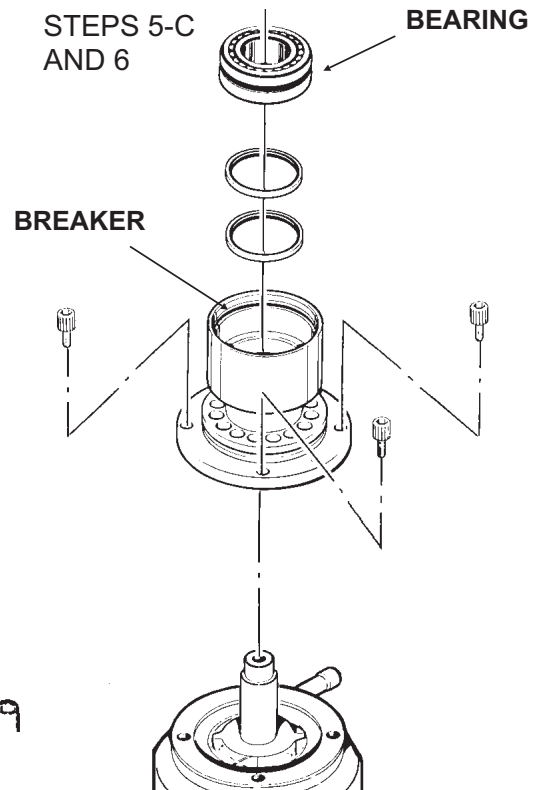
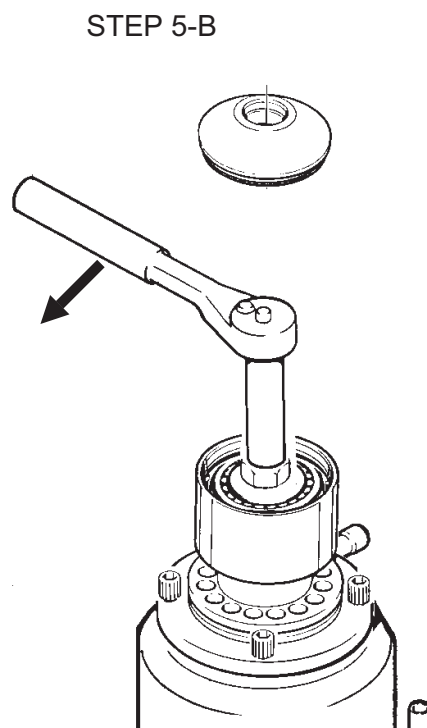
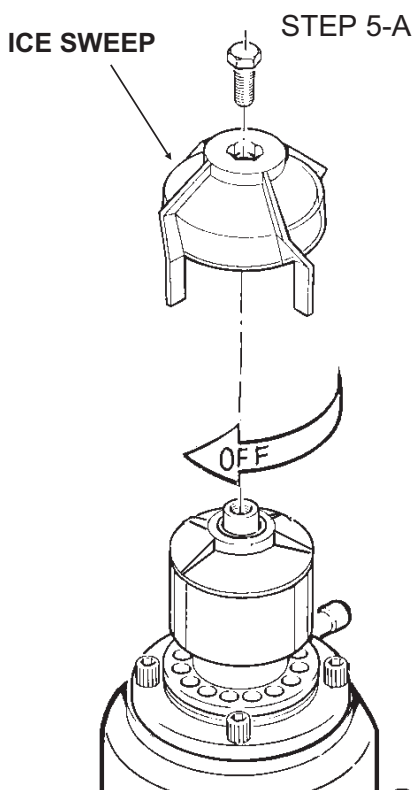
Note: seals must be pressed in with a tool pushing against the outer edge only, they will not install by hand.

Replace parts as required. Re-grease bearing with Scotsman part no. A36808-001 bearing grease. Replace top seal, and check the o-rings, replace if cut or torn.

7. Reverse to reassemble: specific tools and materials are required to install properly.

a. Add food grade grease such as Scotsman part number 19-0569-01 to the seal area before installing on the auger.

b. Check the seal to shaft areas for cuts, or rough spots: none are permitted.

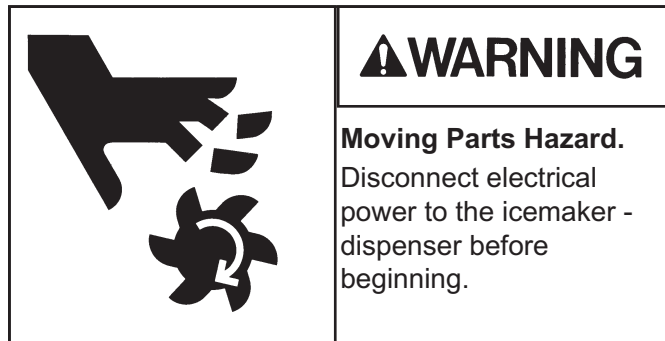




## REMOVAL AND REPLACEMENT

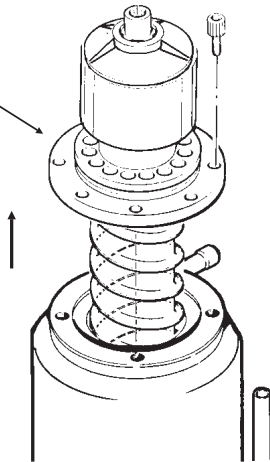
### To Remove the Auger:

Turn off the water to the machine, and unclip the evaporator drain hose, pull it down and drain the evaporator into the bin or a container.



1. The top panel must be removed.
2. Remove ice chute cover.
3. Unscrew ice sweep.
4. Remove ice chute body.
5. The auger and breaker/bearing may now be removed as an assembly.

**BREAKER/  
BEARING/  
AUGER  
ASSEMBLY**



**SHARP EDGES!**

- a. Unscrew 4 allen head cap screws holding breaker to evaporator.
- b. Lift up on breaker and remove auger from evaporator.

**Note: If the auger is stuck, the breaker must be removed from the auger.**

The breaker may be removed from the auger and evaporator without disturbing the auger.

- a. Unscrew breaker cover from breaker (left hand threads)
- b. Unscrew auger stud from top of auger.
- c. Unscrew 4 allen head cap screws holding breaker to evaporator.
- d. Lift up & remove breaker from evaporator.

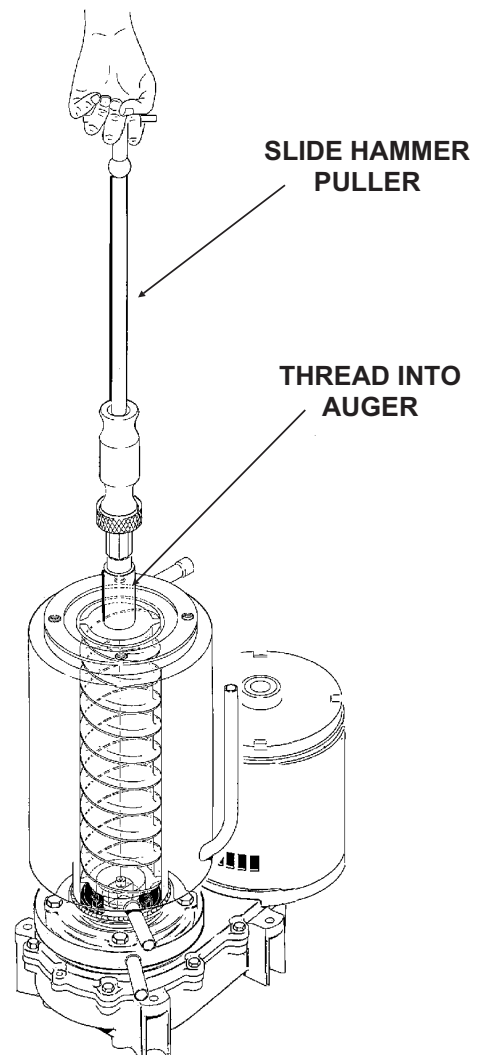
- e. If the auger is stuck use a slide hammer type puller to pull on the auger at the threaded hole. The size of that hole is 5/8"-18.

Inspect the auger, the critical areas of the auger are:

1. The auger body. It should be clean and shining. Sometimes an auger will appear clean when wet, but after it is dry it will be seen to be stained. Scrub the auger with ice machine cleaner and hot water.

**Ice machine cleaner is an acid. Handle it with extreme care, keep out of the reach of children.**

2. The water seal area. Because the auger has been removed, the water seal will have to be replaced. Remove the water seal top half from the auger, and inspect the auger for minerals clean as required.



# NDE754

## REMOVAL AND REPLACEMENT: Water Seal

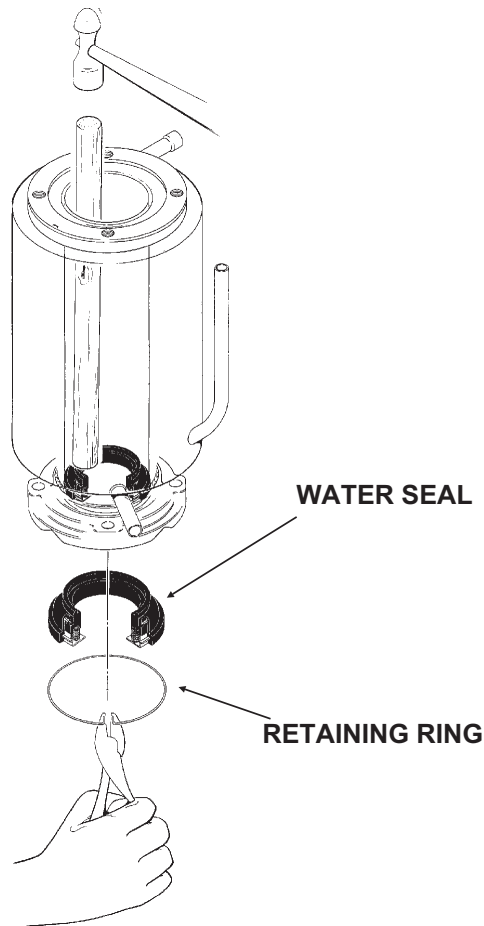
### To Remove the Water Seal:

(Assuming all steps to remove the auger have been performed.)

1. The gearmotor/evaporator assembly will have to be exposed. (See illustration - next page)
2. Remove the 4 hex head cap screws holding the evaporator to the gearmotor assembly. Lift the evaporator up and off of the gearmotor.
3. Remove the snap ring or wire retainer from the groove under the water seal.
4. Pull or drive out the lower half of the water seal.

### To Replace the Water Seal:

1. Lubricate the water seal with water, and push the water seal into the bottom of the evaporator slightly past the groove for the snap ring.



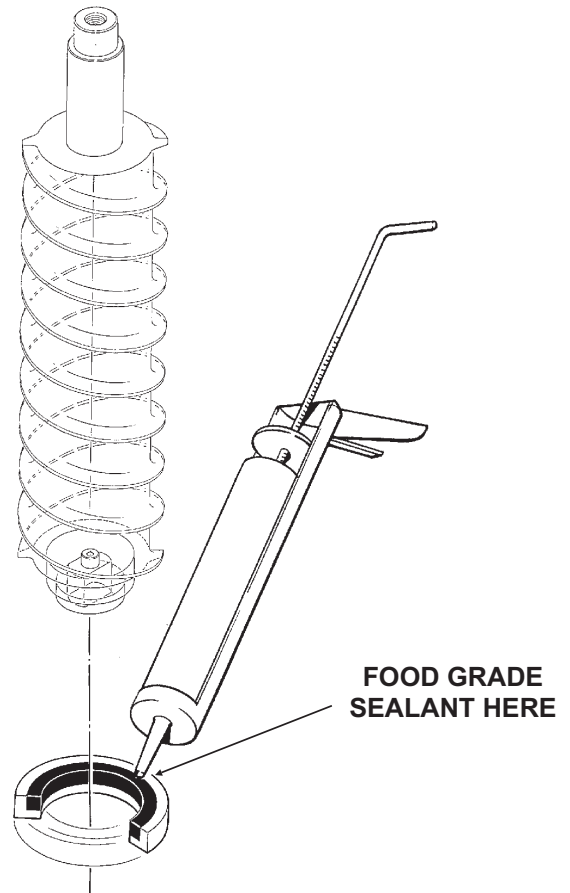
2. Replace the snap ring and pull the water seal down against it.
3. The part of the water seal that rotates with the auger must also be replaced. Remove the old part from the auger and clean the mounting area.
4. Place a small bead of food grade silastic sealant (such as 732 RTV or Scotsman part number 19-0529-01) on the area of the auger where the water seal is to be mounted.

5. Carefully push the water seal (rubber side against the auger shoulder and the silastic sealant.)

**Do not get any sealant onto the face of the seal.**

6. Allow the auger and seal to air dry until the sealant is dry on the surface.

7. If the original water seal was leaking, it would be a good idea to inspect the interior of the gearmotor.



## REMOVAL AND REPLACEMENT

### To Replace the Evaporator:

(Assuming all the steps for removal of the thrust bearing, breaker, auger, and water seal have been performed.)

1. Recover the refrigerant from the ice maker.
2. Unsweat the refrigerant connections:
  - a) At the thermostatic expansion valve outlet.

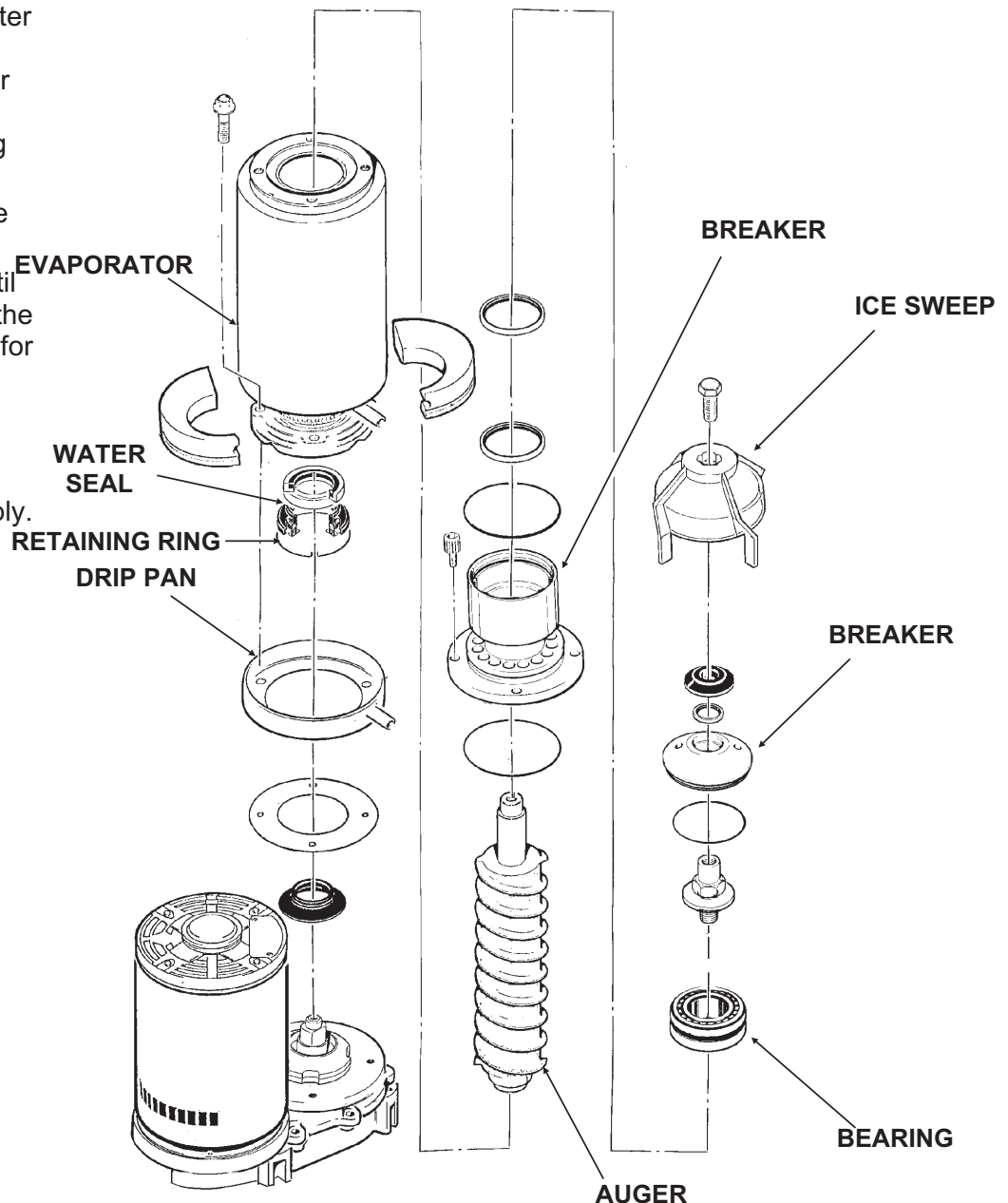
### Heat sink the TXV body when unsweating or resweating the adjacent tubing.

b) At the suction line at the joint about 3" from the evaporator.

3. Remove the evaporator.
4. Unsweat the drier from the liquid line.
5. After installing a new water seal in the new evaporator (see "To Replace the Water Seal") sweat in the new evaporator at the old tubing connections.
6. Install an new drier in the liquid line.
7. Evacuate the system until dehydrated, then weigh in the nameplate charge. Check for leaks.
8. Install auger, breaker, breaker bearing assembly, and ice discharge chute in reverse order of disassembly.

### To Reassemble the Evaporator and Auger

1. After the gearmotor has been inspected, fasten the evaporator to the gear motor, be sure that the number of shims indicated on the gear case cover is in place between the gearcase cover and the drip pan gasket. Torque the bolts to 110 inch pounds.
2. Lower the auger into the evaporator barrel, slightly turning it to match up with the drive end. Do Not Drop Into the Evaporator.
3. Complete the reassembly by reversing the disassembly for the breaker & thrust bearing assembly.

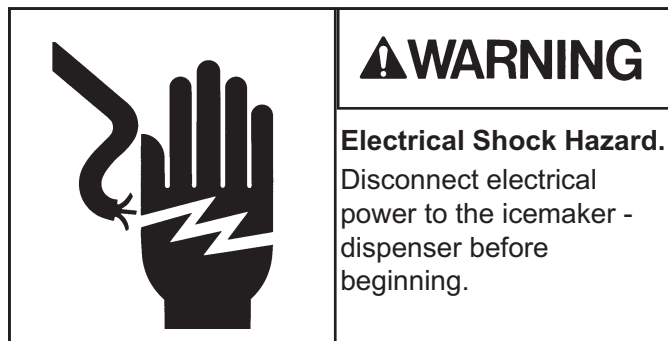


# NDE754

## TO REMOVE AND REPAIR THE GEARMOTOR ASSEMBLY

(Assuming that the procedures through removal of the water seal have been performed.)

1. Remove the electrical wires from the gear drive motor.



2. Unscrew the 4 cap screws holding the gearmotor to the gearmotor plate.

3. Remove the gearmotor from the icemaker.

### To Inspect the gearmotor.

A) Remove the cap screws holding the gearmotor case halves together and pry the two cases apart.

B) To lift off the cover, lift up until you can feel internal contact, then pull the cover towards the output gear end, and then lift the cover (with drive motor attached) up and away from the gear motor case.

Note: The case cover output gear, bearings, and shaft are one pressed together assembly. Replace as a unit.

C) Inspect the oil, gears, and bearings. If the oil level and condition is acceptable, quickly check the gears and bearings. They are likely to be fine if the oil is.

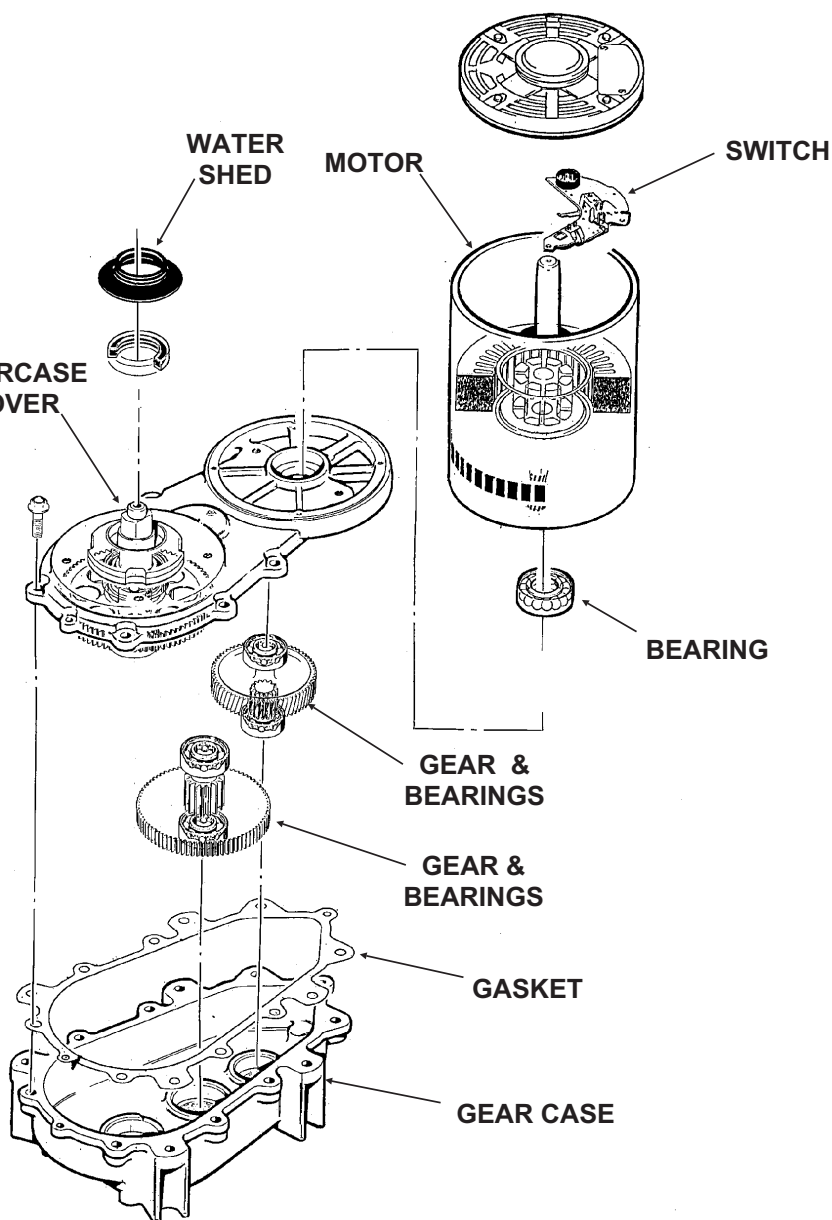
If there is evidence of water in the oil (rusty bearings and gears; the oil having a creamy white appearance; oil level too high) carefully inspect the bearings and gears. If in doubt about the condition of a part, replace it. The oil quantity is 14 fluid ounces, do not overfill.

Note: The gears and bearings are available only as pressed together sets.

D) After replacing parts as required, (if any) reassemble the gearcase. The two smaller gears and the oil should be in the lower case, the output gear will be with the cover. As you lower the cover onto the lower case, cover will have to be moved closer to the second gear after the output gear has cleared the second gear top bearing.

E) After the case is together, and the locating pins are secure in both ends, replace all cap screws.

4. Bench test the gearmotor, check for oil leaks, noise, and amp draw.



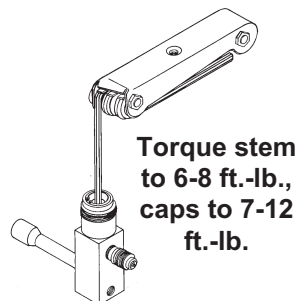
## REFRIGERATION SERVICE

General: This ice machine uses R-404A refrigerant and polyolester oil. Do NOT use mineral oil in this refrigeration system.

- When the system is serviced, a special liquid line drier is required. It is included with replacement compressors.
- R-404A is not compatible with mineral oil so these ice machines use Polyolester oil. Polyolester oil absorbs water very easily. A system opened for service must be re-sealed as soon as possible (15 minutes maximum).
- Special leak detection equipment is required to locate small refrigerant leaks. Usually a leak detector capable of detecting a Halogenated refrigerant or HFC-134a will work. Check with the leak detector manufacturer if in doubt.
- Evacuate to 300 microns.
- Liquid charge the system

**Access Valves:** To use the access valves:

- Remove the cap from the stem, use a 3/16" allen wrench to check that the valve is CLOSED. The remove the core cap.
- Close the valve and replace the caps when done. The valve must be closed and the caps must be on or the valve will leak.



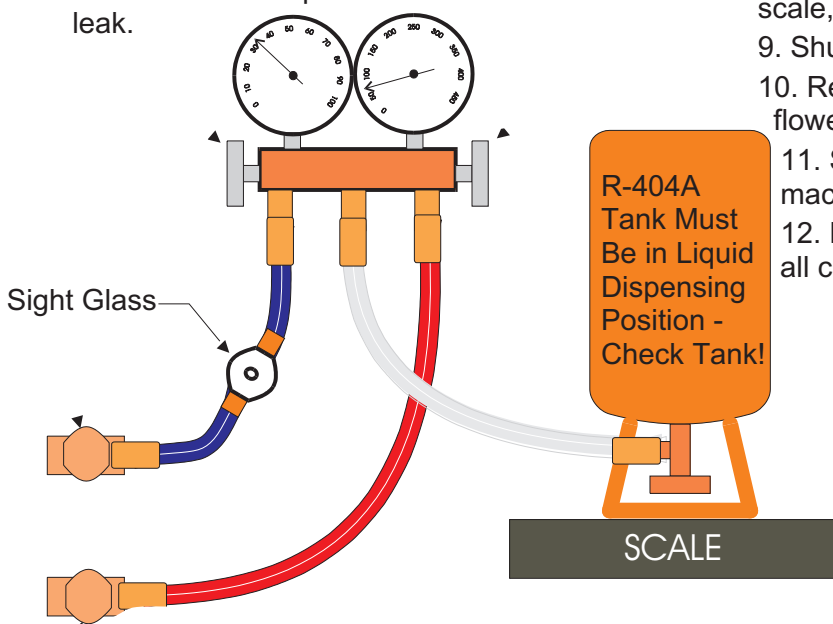
### Instructions for Liquid Charging R-404A

In preparation for charging, the low side hose should have a sight glass, and/or a restricting device (such as a "Charge Faster") installed in it for metering liquid into the low side of the system.

1. After a thorough evacuation shut off the manifold valves and switch off the vacuum pump.
2. Place a drum of R-404A onto an electronic scale.
3. Attach the charging hose to the drum.
4. Open the valve on the drum and purge the charging hose.
5. Zero out the scale.
6. Shut the low side access valve at the ice machine.
7. Open the discharge manifold valve full open.
8. Watch the scale, when the correct charge is shown, shut the manifold valve.

Note: If all of the charge will not "go in" the discharge side:

- A. Shut the discharge access valve at the ice machine.
  - B. Switch the machine on.
  - C. Open the low side access valve at the ice machine.
  - D. Open the low side manifold valve and observe the sight glass to be certain that only gas is flowing into the system.
  - E. When the proper charge is indicated on the scale, shut off the manifold valve(s).
9. Shut off the valve on the refrigerant drum.
  10. Re-open the manifold valves until all liquid has flowed out of the hoses.
  11. Shut the low side access valve on the ice machine.
  12. Remove hoses from ice machine and replace all caps.



*Hose Connection Schematic for Liquid Charging*